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Notice of Allowability	Application No.	Applicant(s)	
	10/772,409	HASHIZUME ET AL.	
	Examiner	Art Unit	
	Mike Stahl	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 3/3/2006.
2. ☒ The allowed claim(s) is/are 1-7 and 9-16.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee. The application has been amended as follows:

- Replace claim 1 with the following version:

1. A wavelength division multiplexing optical coupler comprising:

an input optical fiber for emitting a flux of light multiplexed with a plurality of wavelengths from an end face thereof;

a first lens having a first face into which the flux of light emitted from the input optical fiber is input, and a second face from which the flux of light converted into a flux of parallel light is emitted;

a first optical filter group comprising a plurality of optical filters through which predetermined wavelength ranges of light are transmitted respectively aligned along a direction of advancing the flux of parallel light so as to be fixed on a side of the second face of the first lens by angles different from each other relative to an optical axis of the first lens such that fluxes of light in predetermined wavelength ranges included in the flux of parallel light are reflected respectively in predetermined directions;

a set of output optical fibers, end faces of which are arranged at positions at which fluxes of parallel light arranged by the respective optical filters of the first optical filter group

are focused respectively by input into the second face and emitted from the first face of the first lens;

a second optical filter group for transmitting the predetermined wavelength ranges arranged between the first face of the first lens and the respective end faces of the set of the output optical fibers for coupling the fluxes of light reflected by the respective optical filters of the first optical filter group;

a second lens having a third face from which a flux of light transmitting through all of the optical filters of the first optical filter group is input and a fourth face from which the flux of light is emitted; and

at least one further optical fiber, an end face of which is arranged at a position of coupling the focused flux of light from the second lens.

- Replace claim 2 with the following version:

2. The wavelength division multiplexing optical coupler according to claim 1, wherein the first lens is a gradient index rod lens having a first end face corresponding to the first face and a second end face corresponding to the second face and wherein the input optical fiber and the set of the output optical fibers are held such that optical axes thereof are in parallel with each other.

- Replace claim 3 with the following version:

3. The wavelength division multiplexing optical coupler according to claim 2, wherein the optical filter of the first optical filter group arranged to a side mostly proximate to the second end face of the first lens is in close contact with the second end face of the first lens.

- Replace claim 4 with the following version:

4. The wavelength division multiplexing optical coupler according to claim 3, wherein the optical filter in close contact with the second end face of the first lens is constituted by a dielectric multilayer film which is directly formed on the second end face of the first lens.

- Replace claim 5 with the following version:

5. The wavelength division multiplexing optical coupler according to claim 2, wherein at least portions of the optical filters belonging to the second optical filter group are dielectric multilayer films and are directly formed at portions of the first end face of the first lens on a side opposed to an end face thereof brought into close contact with the optical filter belonging to the first optical filter group.

- Replace claim 9 with the following version:

9. The wavelength division multiplexing optical coupler according to claim 1, wherein the second lens is a gradient index rod lens having a third end face corresponding to the third face and a fourth end face corresponding to the fourth face and the optical filter of the first optical filter group arranged to a side mostly proximate to the third end face of the second lens is brought into close contact with the third end face of the second lens.

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- Replace claim 10 with the following version:

10. The wavelength division multiplexing optical coupler according to claim 9, wherein the optical filter brought into close contact with the third end face of the second lens is a dielectric multilayer film and is formed directly on the third end face of the second lens.

- Replace claim 11 with the following version:

11. The wavelength division multiplexing optical coupler according to claim 9, wherein at least one of the output optical fibers is held by a holding member having a fine through hole along a longitudinal direction thereof.

Explanation: Claim line numbers referred to below are line numbers of each claim itself as it appeared in the March 3, 2006 amendment (not line numbers of each page). Applicant's amendment to claim 1 effectively added another lens to the coupler. Since some of the dependent claims provide further limitations of each lens individually, the examiner has added labels of "first" and "second" to each lens to reduce the possibility of confusion as to which lens is being further limited by the respective dependent claims. Specifically, in lines 4, 10, 16, and 18 of claim 1, "first" is inserted before each instance of "lens"; in line 21, "another lens" is changed to "a second lens"; and in line 25, "from the second lens" is inserted after "light". Similarly, each instance of "the lens" is changed to "the first lens" in claim 2 line 2; claim 3 lines 3 and 4; claim 4 lines 3 and 4; and claim 5 line 4. Each instance of "the lens" is changed to "the second lens" in claim 9 lines 2 and 5 and claim 10 lines 2 and 3. To further clarify the end faces

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on which the film is formed, “second” is inserted before “end face” in claim 4 line 4; and “third” is inserted before “end face” in claim 10 line 3.

The following minor editorial changes have also been made: In claim 1 line 2, “of” is inserted after “plurality”. In claim 4 line 2, “brought into” is changed to “in” (to be consistent with applicant’s change to claim 3). In claim 9, “and the” is inserted after “fourth face” in line 3, and “filter” is inserted before “group” in line 4 (these words appear to have been inadvertently omitted from the original version of claim 9). In claim 11 line 2, “said” is deleted (to avoid an antecedent basis conflict).

All the above changes are made merely for the purpose of improving clarity of the claims without altering their scope, and are believed to be obvious in nature.

Allowable Subject Matter

Claims 1-7 and 9-16 are allowed.

Claim 1 is allowable since it was amended to include the allowable subject matter of original claim 8 as identified in the last Office action (mailed December 8, 2005). Claims 2-7 and 9-11 depend from claim 1. Claim 12 is allowable because it further limits the location of the second lens, in particular, requiring that its third face is adjacent to the second face of the first lens. This condition is clearly not described by, or obvious in view of, the previously applied Imoto et al. reference which requires an intervening transmission fiber 7. Claims 13-14 depend from claim 12. Claim 15 is allowable because it was amended to resolve the informality objection in the last action. Claim 16 depends from claim 15.

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Conclusion

Inquiries about this letter should be directed to Mike Stahl at 571-272-2360. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official correspondence which is eligible for submission by facsimile and which pertains to this application may be faxed to 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions about the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Stahl *MJS*
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May 9, 2006


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